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# A COMPARISON OF THE GALVANIC SKIN RESPONSE IN THE HYPNOTIC AND WAKING STATE

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A review of the literature revealed no studies which are directly comparable to the present one. None of the previous experiments were concerned with the amount of deviation of the electrical skin resistance occurring during the hypnotic state compared to the deviation occurring during the waking state. Previous studies of the galvanic skin response and hypnosis were of two types: (1) Investigations of the galvanic skin response and hypnotic anesthesia, or (2) Investigations of the general direction (increase or decrease) which the skin resistance tended to take during the trance state. That is, an effort was made to determine whether or not the skin resistance during hypnosis resembled the skin resistance during the sleep or waking state.

Levine (5) found in a comparison of the electrical skin resistance during the waking state with that during hypnosis, that the induction of hypnosis does not materially alter the electrical skin resistance. He concluded that changes in skin resistance could not be used as criteria of the presence or depth of hypnosis.

In contradiction to Levine's results, Estabrooks (3) found that skin resistance increased in the hypnotic state, and also tended to increase with the mere presence of the operator. In a typical somnambulist, the resistance would at first tend to soar only as hypnosis was induced, but after the subject had been hypnotized a number of times the presence of the operator in the room would cause this phenomenon. Estabrooks suggests that this may give an objective measurement of the depth of hypnosis.

In an unpublished experiment by Sears (8) an attempt was made to study the changes in respiratory rate, heart action, and galvanic skin response under hypnosis when no excitatory or emotional changes are induced. The results indicate that the blood pressure, pulse rate, and galvanic skin response decrease after the hypnotic trance has been induced. A t-test for matched pairs revealed that the differences between the waking and hypnotic measurements were significant at the .0001 level of confidence for blood pres-

sure; .0025 for pulse rate; .0025 for galvanic skin response; and .0125 for lung aeriation.

Davis and Kantor (1) examined the possibility that the hypnotic state resembled neither sleeping nor waking but was somewhere in between, approaching one or the other, depending upon the nature of the suggestions given the subjects. Their technique was to compare the subject's resistance when given sleep suggestions with his resistance when given suggestions to perform certain activities while in the hypnotic state. The results indicated that there was a significant difference between the behavior of skin resistance during active and passive hypnotic states; the lethargic hypnotic condition resembled sleep in the behavior of skin resistance, the active hypnotic condition resembled the waking state. Davis and Kantor concluded that "the physiological condition during hypnosis may vary from a low degree of activity, such as found in sleep, to a high degree, such as found after stimulation in a waking state, depending on the kind of hypnotic state which is produced."

From a study of the galvanic skin response to painful stimuli in hypnosis and hysterical anesthesia, Levine (6) concluded that the galvanic response was present when a painful stimulus, applied to an area of anesthesia suggested during hypnosis, produced no overt response and no report of perception of pain. However, Levine's results only indicated that the galvanic skin response was present and did not indicate whether there was a weakening of the response under these conditions.

In a study which attempted to determine quantitatively the difference in responsiveness to sensory stimuli of individuals both in the waking state and in the hypnotic trance, Dynes (2) noted only a slight decrease of the galvanic reflex in the trance. The three indicators of emotional response to sensory stimulation employed in this experiment were respiratory rate, heart rate, and psychogalvanic reflex. He found that respiration and cardiac activity show little or no disturbance in rate and rhythm following painful stimuli in hypnotic anesthesia while they did show a disturbance during stimulation in the waking state. The psychogalvanic reflex was little influenced in hypnosis, there being only a slight decrease under hypnotic anesthesia following sensory stimulation.

An experiment by Sears (9) attempted to discover at what psychophysiological levels, and to what quantitative extent, hypnotic anesthesia was able to modify the ordinary reactions to painful stimuli. Facial grimace, respiratory movements, pulse activity and the galvanic response were the types of activity chosen for study. The left leg was used for the study of hypnotic anesthesia, the right leg being used as a non-anesthetized control. The psychogalvanic reaction showed a mean reduction of 20% on the anesthetized leg.

Similar results were found by West, Niell, and Hardy (10) in a study which measured pain perception and the galvanic skin response of seven subjects before and during hypnosis. Quantitatively determined stimuli were administered, and changes in pain threshold were measured. It was found that hypnotic suggestions of anesthesia produced a definite reduction in the galvanic skin response to noxious stimulation. The significance of the difference between the waking and the hypnotic skin response to identical stimuli was significant at the .01 degree of confidence for six subjects, at the .05 degree of confidence for the seventh.

## METHOD AND ANALYSIS

Because of the lack of consistency in the results of reported experiments, an attempt was made in this study to determine whether or not there was a difference in the amount of deviation of the galvanic skin response between the waking and hypnotic states. The basis of the study was a series of questions relating to a table top setup which the subject had seen while in the waking state one week prior to being questioned about it.

Twenty four university students, 12 male and 12 female, served as subjects in this experiment. The subjects were between the ages of 17 and 39 with a mean age of 22.8 years. They were selected on the basis of their ability to go into a medium trance state or deeper according to the Davis and Husband Scale of Hypnotic Susceptibility on counting to 10. All subjects were volunteers and were paid $1.00 per hour for their participation.

Apparatus included a stopwatch which was used for timing the 30 second observation of the table top setup.

The table top setup which the subjects observed consisted of 16 small objects placed on the top of a 16" x 24" typewriter stand

(Appendix I).

A Stoelting #24207 Psychogalvanometer, with fingerclips, which was fed through an auxiliary amplifier into an Esterline Angus Recording Milliammeter, Model AW (Appendix II) was used to measure and record the galvanic skin response.

An ordinary studio couch where the subjects might relax in a reclining position was used during Session II.

Because each subject was serving as his own control, the subjects were not matched but were assigned to one of four experimental groups in rotation as they came in. That is, the first subject was assigned to Group $A_1$, the second to Group $A_2$, the third to Group $B_1$, the fourth to Group $B_2$, the fifth to Group $A_1$, etc. (Table I). Thus, an attempt at randomization was made.

To prevent differential effects of the order in which the material was recalled during the first session, half of the subjects (Group A) recalled the material first while in the waking state and then while in the hypnotic state. The order was reversed for the other 12 subjects (Group B), hypnotic recall being followed by waking recall. Four experimental groups were considered necessary to counterbalance the effects of the hypnotic measurements being taken prior to or following the waking measurements. Consequently, Group A and Group B were each split into two subgroups. In Groups $A_1$ and $B_1$, waking questioning was followed by hypnotic questioning, and in Groups $A_2$ and $B_2$ hypnotic questioning was followed by waking questioning.

During Session I, all subjects observed the table top setup in the waking state for 30 seconds after having been read the following instructions:

This is an experiment to measure physical responses during questioning over material which you have observed. The purpose of the first session will be to get a comparison of your waking and hypnotic recall of this material. During this session you will first observe the objects on the top of a table for 30 seconds; then you will be asked to write out what you remember in both the waking and the hypnotic states.

Group A immediately wrote out all that they could remember, first in the waking state and then after being put into a hypnotic trance by counting. Each subject was asked to write out the name,

the location, the color, and description of each object; he was allowed as much time as he needed to write this. Group B wrote what they could remember, first while in the hypnotic state and then in the waking state. The data from these writeups were not analyzed because the written description of the table top was intended only to prolong the first session and impress the material upon the subject. An analysis of waking and hypnotic recall of a table top setup was previously done by Sears (7).

TABLE I

| | Group A | | Group B | |
|---|---|---|---|---|
| Session I | observe set up<br>Waking recall followed by hypnotic recall | | observe set up<br>hypnotic recall followed by waking recall | |
| Session II | $A_1$<br>waking questioning followed by hypnotic questioning | $A_2$<br>hypnotic questioning followed by waking questioning | $B_1$<br>waking questioning followed by hypnotic questioning | $B_2$<br>hypnotic questioning followed by waking questioning |

The second session followed seven or eight days after the first. At the beginning of Session II, each subject was asked to lie down on a couch, and the psychogalvanometer fingerclips were attached to the first and third fingers of his left hand. Before any measurements were taken there was a five minute period during which the subject was asked to lie as still as possible while the apparatus was adjusted. The subject did not move from the couch during the entire session so that both the hypnotic and waking recording of the galvanic skin response was made while the subject was in the same positon. Groups $A_1$ and $B_1$ were first asked while in the waking state a series of 14 questions concerning the table top setup (Appendix III). With no change in apparatus or bodily position, the

subject was put into a medium trance state by counting. In all cases, there was a 10 minute period of inducing and deepening the hypnotic trance, and then the same questions were asked. Groups $A_2$ and $B_2$ were first questioned while in the hypnotic trance and then after having been awakened were questioned again while the subject and apparatus were in the same position. The subjects were instructed to "just relax as much as possible" while the waking measurements were taken. In most cases, minor fidgiting was observed, indicating that the subjects were not able to relax completely while in the waking state. In contrast to this, there was no observable unnecessary movements while the subjects answered the questions in the hypnotic state.

The sensitivity control of the psychogalvanometer was set at #1 with the selector switch at "automatic zero" during both the waking and hypnotic questioning of all subjects. The sensitivity of the auxiliary amplifier was adjusted so that the needle on the Esterline Angus recorder would register a full swing across the tape correlating with the full swing of the needle on the dial of the psychogalvanometer.

With the selector switch set at "automatic zero", the amount of deviation of the galvanic skin response, whether in a positive or negative direction, was recorded. The amount of deviation during both the waking and hypnotic questioning of each subject was measured in millimeters. Because the subjects tended to respond more slowly during hypnotic questioning than during waking questioning, a direct comparison of the amount of deviation in the two states could not be made. The tendency to respond more slowly while under hypnosis influenced the data in two ways, both of which would automatically increase the total amount of deviation during the hypnotic questioning. First, the length of time spent in hypnotic questioning was greater than the time spent in waking questioning. Secondly, due to the increase in time, the number of deviations during hypnotic questioning was greater than during waking questioning. In order to take these factors into consideration, the data was analyzed in the following manner.

Because there was not an equal amount of time spent by each subject in waking and hypnotic questioning, the amount of deviation during hypnotic questioning was divided by the total number of sec-

onds that the subject required to answer the questions while under hypnosis. Similarly, the amount of deviation during waking questioning was divided by the number of seconds that were required for the waking questioning. Thus, a measure of the deviation per second for both the waking questioning and the hypnotic questioning was obtained by dividing the amount of deviation (D) by the number of seconds (T) spent in answering the questions in each state. The mean deviation per second ($\frac{D}{T}$) for the group while answering in the hypnotic state was 1.74 millimeters per second and in the waking state 1.96 millimeters per second. A t-test to determine the significance of the difference between the waking and the hypnotic measure for each subject yielded a t of 1.38 which is not statistically significant. However, inspection of the data revealed that there might be a sex difference in the deviation per second of the galvanic skin response during waking questioning. The mean deviation per second for females during waking questioning was 2.19 and during hypnotic questioning 1.72 millimeters per second. The mean deviation per second for males during waking questioning was 1.73 and during hypnotic questioning 1.77 millimeters per second. A test of the significance of the difference between the two measures for each subject resulted in a t of 3.17 for females, which is significant at the .01 level of confidence, and a t of -.18 for males (Table II).

TABLE II

Mean Deviation per second ($\frac{D}{T}$)

| | Waking | Hypnotic | Difference | t | Significance |
|---|---|---|---|---|---|
| Males | 1.73 | 1.77 | -.04 | -.18 | |
| Females | 2.19 | 1.72 | .47 | 3.17 | .01 |
| Total | 1.96 | 1.74 | .22 | 1.38 | |

Because the number of deviations during hypnotic questioning was greater than during waking questioning, the amount of devia-

tion (D) was divided by the number of deviations (ND). This yielded measures of the average deviation during waking questioning and during hypnotic questioning for each subject. The mean average deviation ($\frac{D}{ND}$) for the group during hypnotic questioning was 7.38 and during waking questioning 8.36 millimeters. A t-test to determine the significance of the difference between the two measures for each subject resulted in a t of 1.41 which is not statistically significant. However, a sex difference was again suspected, so a test of the significance of the difference between the waking and the hypnotic measure for each subject was run on males and females separately. The mean average deviation for females during waking questioning was 9.52 and during hypnotic questioning 7.43 millimeters. The mean average deviation for males during waking questioning was 7.20 and during hypnotic questioning 7.25 millimeters. This analysis yielded a t of 4.79 for females, which is significant at the .001 level of confidence, and a t of -.04 for males (Table III).

TABLE III

Mean Average Deviation ($\frac{D}{ND}$)

| | Waking | Hypnotic | Difference | t | Significance |
|---|---|---|---|---|---|
| Males | 7.20 | 7.25 | -.05 | -.04 | |
| Females | 9.52 | 7.43 | 2.09 | 4.79 | .001 |
| Group | 8.36 | 7.38 | .98 | 1.41 | |

It was interesting to note that the hypnotic measures of the mean deviation per second (Table II) and the mean average deviation (Table III) were essentially the same for both males and females. However, for both indicators of deviation of the galvanic skin response, the female waking measure showed a definite increase in the amount of deviation. It was beyond the scope of this article to explain this apparent sex difference; further research will be needed to confirm and account for it.

Perhaps the existence of such a sex difference in the behavior

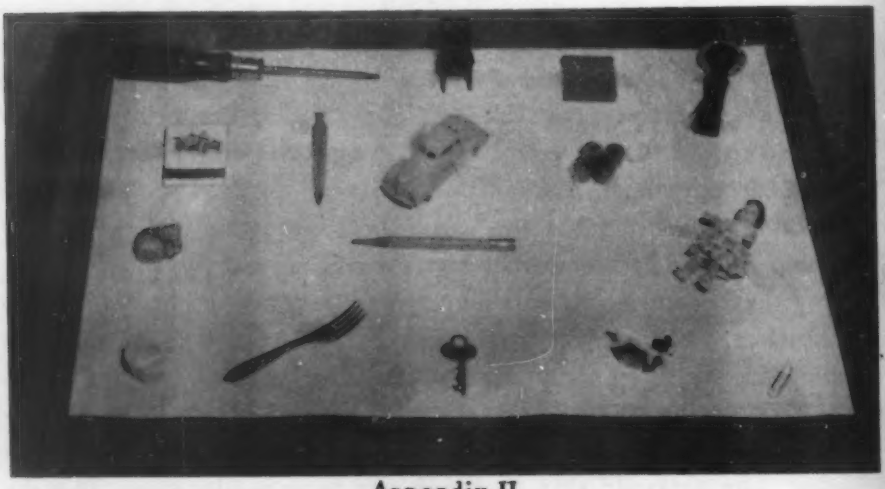
of the galvanic skin response during hypnotic questioning may explain the contradictions in the results of previous experiments. The use of primarily male or female subjects could possibly influence the results of an experiment considerably. Depending upon the sex of the subjects used, the data could support either of two hypothesis: (1) The behavior of the galvanic skin response is the same under hypnosis as in the waking state. (2) The behavior of the galvanic skin response under hypnosis differs from that in the waking state.

## SUMMARY

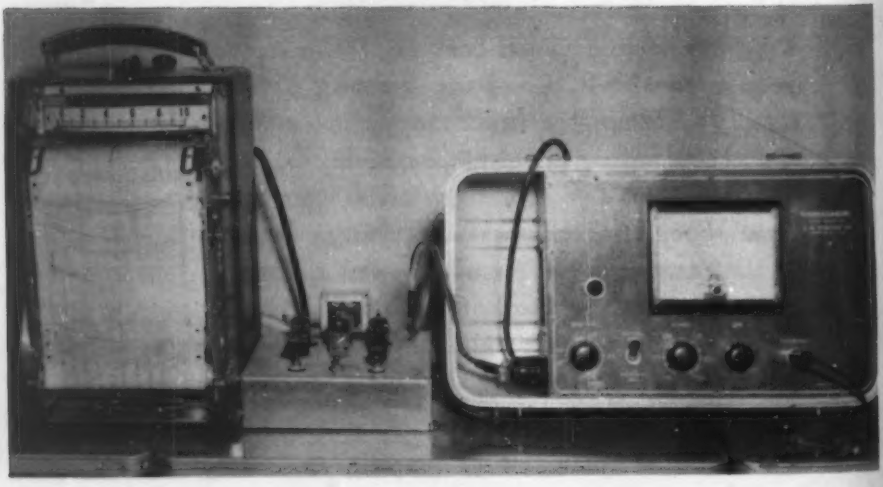
In this experiment an attempt was made to determine whether or not there was a difference in the galvanic skin response between waking and hypnotic questioning. The 24 subjects were randomly assigned to one of four groups, each group following a different sequence of experimental conditions. During the first session, each subject observed a table top setup for 30 seconds and then wrote out what he could remember in both the waking and hypnotic states. During the second session, which followed seven or eight days after the first, each subject was asked a series of 14 questions concerning the table top setup. Half of the subjects answered the questions first in the waking and then in the hypnotic state; for the remaining 12 subjects hypnotic questioning preceeded waking questioning. The galvanic skin response was recorded for both the waking and hypnotic questioning of all subjects, and the amount of deviation was measured in millimeters. Because the subjects tended to respond more slowly during the hypnotic questioning than during the waking questioning, a direct comparison of the amount of deviation in the two states could not be made. Consequently, two indicators of amount of deviation were considered necessary: mean deviation per second ($\frac{D}{T}$) and the mean average deviation ($\frac{D}{ND}$). No significant differences were found between the waking and hypnotic questioning in a comparison of the mean deviation per second for the group and for the males alone. However, there was a difference between waking and hypnotic questioning in the mean deviation per second for females, significant at the .01 level of confidence. The difference between the waking and hypnotic measures of the mean

average deviation were also not significant for either the total group or for the males. For females, this difference was significant at the .001 level of confidence. No attempt was made to explain this apparent sex difference in the behavior of the galvanic skin response. It was suggested that further research be done to confirm and account for these results. The differences between the results of male and female subjects in this experiment, where procedures were the same for both, may account for the conflicting reports found in the literature. In many of the reported experiments the sex of the subjects has not been noted.

Appendix I



Appendix II



## Appendix III

### Questions to ask subjects

1. What object is in the lower right hand corner?
2. What is directly to the left of this?
3. How many objects are there on the table top?
4. What object is in the upper right hand corner?
5. What is directly to the left of this?
6. What object is in the middle of the bottom row?
7. What is directly above this?
8. Are there any animals on the table top?
9. What is in the middle of the top row?
10. What object is in the lower left hand corner?
11. What is directly above this?
12. What is the smallest object on the table?
13. What object is in the upper left hand corner?
14. What is directly to the right of this?

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# THE INVOLVEMENT OF THE HYPNOTIST IN THE HYPNOTIC SESSION

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The history and literature of hypnosis is marked by a dearth of reference to the experience of the hypnotist in the relationship with his subject. As in the case of other interpersonal relationships so aptly examined by psychoanalysis, (3) (17) (7)*, there is little doubt that the role of the operator is as complex and emotionally meaningful as that of the subject. The hypnotic relationship because of its particular intensity and dramatic coloring is a very fertile field for the examination of the involvement of the therapist or experimenter in the happenings of the session.

Recent evidence has shown that there are physiological changes that accompany rapport during the psychotherapeutic interview (4). Perhaps it is more correct to assume that these changes themselves constitute the so called rapport or transference. Coleman, Greenblatt, and Solomon (4) report the following: "The relationship of the therapist to the patient is believed to be highly significant in determining the course of psychotherapy. This study has utilized both psychological and physiological data from one successful case of psychotherapy in an attempt to objectify the therapist's feelings toward his patient during the course of therapy.

Analysis of the heart rate of the patient revealed *Anxiety* associated with the highest rate, *Depression* with the lowest, and *Hostility*, both extra and intra punitive, in between. The therapist's heart rate response to the patient's emotional expression repeated this pattern with the one exception that *Anxiety* showed no difference from *Extra-Punitive Hostility*, thus revealing a "physiological relationship" of the therapist to the patient. Analysis of the com-

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*Fromm-Reichman makes an interesting analysis of the psychiatrist-patient relationship. While the hypnotic relationship is somewhat different, the hypnotist must have the same understanding of the mechanisms of his response to the subject in order to carry on successfully either as psychotherapist or research worker.

ments dictated by the therapist after each interview indicated that the "physiological relationship" was not displayed by the therapist when his psychological relationship to the patient was disturbed by extra-therapeutic concerns or by negative counter-transference feelings. These data provide tangible evidence of active emotional participation by the therapist during one successful case of psychotherapy. It is suggested that the physiological relationship found in this case reflects psychological empathy. Be this as it may, hypnosis offers more of an emotionally laden picture. This seems to be particularly true if the hypnotic state is, as believed by some writers (9) (21), a particular type of emotional reaction. Thus Solovey de Milechnin (21) says: "We believe hypnosis is brought about by a conditioned stimulation of the primitive emotional responsiveness of an infant or small child to certain vitally-important parental attitudes; and that it results in a return to the peculiar equilibrium in cortical/subcortical activity that characterizes mental functioning at an early age."

The particular responsiveness of a subject is, at least partially, a function of the operator's attitude and behavior and vice versa. Pardell (15) in an analysis of the personality of the hypnotist concludes with Fenichel that the hypnotist may be a person who desires to accept the position of the controlling and omnipotent parent-figure. He emphasizes the fact that some hypnotherapists, although glibly assuring their patients, are themselves uneasy about hypnotic "magic" and surely the concept of magical healing has a long and awesome history. Shapiro (20) in a recent review shows how deeply woven into the woof of medical practice is magic. Where in this entangled picture does the hypnotherapist stand? What are his fears, his gains and his secondary motivations? Says Bowers (2) "In the beginning of hypnosis, the subject enjoys a very deep pleasure in submission, in passivity, and in being cared for." The hypnotist at this time is enjoying his omnipotence, his mother or God figure position and his ability to persuade a patient to permit this close relationship wherein the patient becomes molded by the therapist's desire. Is this, in a way, seductive? If it is – then the therapist may find himself beset by strange fears, conflicts, and desires. Schilder (18), well aware of this says that the psychology of masochism offers us a better understanding of hyp-

notic behavior.

The hypnotherapist is in a situational setting that makes it necessary for him to be entirely aware of the psychological experiences which influence his overt behavior. These are a function of his needs in interpersonal behavior, and depend much upon the characteristics of his subjects. It is important to note whether they are male or female, older or younger, etc.... Older subjects, for example, may arouse familial problems in the hypnotist. He may find that he cannot respond easily to a subject who represents a mother figure. A difficulty in response may also occur with an older male who may represent paternal dominance to the operator and elicit inhibitions with regard to the establishment of an appropriate relationship. These factors operate in the way the hypnotist deals with the subject. It may be said that the hypnotic relationship tests various aspects of impulse handling (10) on the part of the operator or therapist. This is akin to the physician-patient relationship (11), and many of the same ideas come to the worker always accompanied by their impulse dynamics.

The current writer recalls an experience with an extremely hostile subject whose manner suggested a "show me" attitude. The hostility of the therapist aroused in him a desire to withdraw and an eagerness to finish the session before it began. Thus the hypnotic situation made it necessary for the therapist to maneuver his own reactions and to proceed cautiously so as not to over-compensate in his handling of the patient.

To begin with, the induction itself, offers a challenge to the hypnotist. It is unquestionable that his "ego" in terms of self esteem may be severely injured by a failure of a subject to respond. Is this perchance one reason why Freud (3) abandoned hypnosis? There is an aspect of the power-motive, whether or not one accepts the folklore about the "stronger mind" overpowering the weaker in the induction. It is admitted by some operators that there is a feeling of marked power that accompanies a successful induction. On the other hand, one operator reports a gnawing feeling in the pit of the stomach as he procedes. He gets cold hands and cold feet and often finds a sudden drive for micturition or defecation. He swallows nervously and excitedly and is in constant fear of the subject's awareness of what is happening to him. Another op-

erator responds with an excitement which manifests itself in a strange and involuntary nasality in the voice. Always there is the idea that the subject is coming under control. The control of a person, of course, has varied meaning for different people. In some it may arouse paternal responses and in others confusional excitement. Often there is guilt and fear on the part of the hypnotist as there seems to be on the part of many physicians in the physician-patient relationship (11). The guilt, if the subject is a member of the opposite sex, may be a response to sexual impulses (sometimes in diffuse form) which arise within the hypnotist. The fear, often a vague anxiety, may be a function of a number of things.* It may be an outcropping due to an uncertainty as to the ability to resist and handle successfully the impulses of sex or hostility to the "helpless" subject. One investigator has on some occasions been impelled to slap his subject, a young lady, particularly if she offered resistence to induction.

Discussion of this attitude in his personal analysis revealed that when he became sexually involved, he often was roused to hostility if some resistence occurred. He projected his sexual guilt onto the patient. This young physician also showed hostility when a patient was too compliant. He had also found an emotional resistance to physical examination in general medicine.

The assumed helplessness of the subject who is in deep trance may be provocative for the operator in that it may arouse in him various emotional drives, some of which are recognizably sexual. The sex factor is clearly important not only for subject, as shown by Schneck (19), Wolberg (22), and others, but also for the operator whose behavior may be influenced by this experience during the trance. It is of much importance, therefore that the hypnotist achieve some insight into his emotional experiences during the hypnotic session. One hypnotic worker finds that he enjoys exceedingly the experience of a deeply hypnotized female subject whom "he has in his power but to whom he does no harm", to paraphrase his state-

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*On some occasions and in some operators, the fear may be brought about by nonverbalized attitudes toward death that the operator may harbor. Such attitudes may be elicited by the sleep-like appearance of the subject who responds lethargically under some circumstances and may cause apprehension in the hypnotist as to whether arousal or waking is possible.

ment. Another investigator finds that as his subject, particularly if female, goes into trance, he gets an erection. Later on, long after his experience, he may if the chance presents itself, masturbate, merely retaining the fantasy of his hypnotic experience. Kline (13) in a personal communication, reports on a young psychological intern learning to perform hypnosis who, during successful hypnosis on one occasion that is known, ejaculated in his trousers. Of course one must be careful not to read specific sex meaning into the situation, since it may be, as indicated by Ellis (6) with respect to certain auto-erotic occurrences, a function of the generalized excitement. Under such circumstances the sexual component may be super-imposed following the awareness of sensation from a sexual organ which is becoming tumescent.

It is important that therapists in this area, as in therapy of a non-hypnotic kind, be careful not to read into their subjects or suggest to them problems which are a function of the therapist's own response to the situation. It would appear, especially when realizing its significance for the waking subject, that an individual under hypnosis is particularly susceptible to iatrogenicity (5). An inability on the part of the operator to perceive and understand his own involvement may be a definite factor in his failure to be able to carry out adequate psychotherapy.*

Le Cron (14) has made an attempt to poll workers in hypnosis with regard to their own hypnotizability. His evidence, in accordance with previous impressions, shows a low degree of hypnotic response on the part of these people. This is interesting with reference to personality factors that might be operating in these cases. An objective study of personality of workers in hypnosis would be of value in discovering what characteristics might be present in successful hypnotherapists and experimental workers in this area. This, if accompanied by personality data on patients, might be used in developing a means of efficient selection (where necessary) of therapists for specific types of patients.**

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*Apprehension on the part of the hypnotist may be sensed by the subject who is, it would seem, keenly aware of changes in the behavior of the operator. There are robably wide individual differences in this respect.

**Such study might avail itself of test data and case history data of the hypnotist as well as the subject and might be of value in other aspects of psychotherapy as well.

The choice of the method of hypnosis, either for research or therapy is, of needs, a function of certain personality factors in a worker. This is probably equally true in vocational choices of any kind where the choice is voluntary and not the result of environmental pressures per se.*

In summary, in the actual hypnotic relationship, the attitudes of the operator may influence his behavior markedly and are probably even more important than those of the subject in carrying through a successful relationship. It has been indicated in another paper that the subject's impulse handling is more important than his attitude toward hypnosis in actual hypnotizability. This view is a re-interpretation of that of Sarason and Rosenzweig (16) with regard to the same problem. The way the operator handles his own impulses seems in itself a most significant problem, and is expressed in his reactions to the induction and later the trance state of the subject. It is indicated that to some workers, the hypnotic response of the subject offers a rare feeling of power which may have psychosexual implications of a heterosexual or homosexual kind depending on the sex of the patient and the emotional needs of the operator. Child-parent relationship attitudes may also be elicited as well as conflicts about dominance-submission related to earlier experience of the worker.** As suggested by Bruno-Bettelheim (1) for children who cannot participate in relations with others as a result of a fear of their own hostility, it appears that some persons might find the hypnotic situation difficult because of a similar factor. Thus some therapists or research workers might be impelled to reject the use of this measure or to fail in using it, because of a non-verbalized fear of their own impulses toward a "helpless" subject in their power. This same situational response may be a problem that arises in the psychotherapeutic or even ordinary medical relationship. Its effect may be to limit full exploration and exploitation of therapeutic possibilities, and to hamper treatment of numerous disorders.

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*The present writer is in the preliminary stages of a study of personality factors in the medical specialties.

**Data on male-female differences in success as hypnotists with members of the opposite sex might be very illuminating. Are female hypnotists as successful with males as subjects as male hypnotists with female subjects? If so what characteristics do these female workers show? This is a suggestive research problem akin to the same problem in physician-patient relationships in our culture.

It is perhaps appropriate to point out in conclusion that Freud left hypnosis, it would seem, because of some unresolved problems. Wolstein (23) says because he could not hypnotize all his patients and because of the magical connotations of hypnosis. The hypnosis in transference is still an open field. Are the two phenomena overlapping or on a continuum? Are the problems of the therapist really the same in both areas? Is transference an aspect of hypnosis?

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# THE USE OF HYPNOSIS IN EVALUATING THE PHYSIOLOGICAL AND PSYCHOLOGICAL COMPONENTS IN THE FUNCTIONAL IMPAIRMENT OF THE PATIENT WITH MULTIPLE SCLEROSIS

Arthur Shapiro, M.D.
and
Milton V. Kline, Ed.D

Hypnosis in one form or another has probably been used since the very beginnings of medical practice, but relatively few reports are available on attempts to use it to influence the manifestations of organic disease of the central nervous system (3.6). Papers dealing with the use of hypnosis in patients with multiple sclerosis have largely been concerned with its use as an adjunct to specific psychotherapy (1). Improvement in patients treated in this way, has been interpreted in terms of the psychodynamic personality response to the psychotherapy. Nevertheless, there is always the danger, in an era when psychodynamics enjoys such tremendous prestige, that psychophysiological phenomena may be interpreted as the consequence of psychodynamics, when actually the causal relationship may be in the opposite direction. This paper deals with some limited observations on one patient with multiple sclerosis who presented us with a unique opportunity and much food for thought.

Multiple sclerosis is a puzzling disease of unknown etiology and unpredictable variable pathogenesis. Its characteristic lesion is a patchy degeneration of the myelin sheaths of the nerve fibres in the central nervous system, and the inflammatory reaction associated with this degeneration. Its clinical manifestations are those of the loss or impairment of function of the involved nerve fibres as shown in the disturbed function of the peripheral structures to which they are connected.

The over-all disability of the patient with multiple sclerosis depends both on the extent of the lesion in the central nervous system and on the manner in which he uses, or fails to use, the resources available to compensate for the damage. Marked differences commonly occur in the severity of the pathological process in multiple

sclerosis; in its rate of change; and in the frequency, duration, extent, and intensity of remission and exacerbation. This is true whether one compares different patients at the same time, or the same patient at different times; and makes clinical evaluation of therapeutic agents extremely difficult. The problem of evaluating therapeutic agents is further complicated by the difficulty of determining the status of the lesion in a particular patient at a particular time.

Clinical history and careful neurological examination provide qualitative and semi-quantitative data concerning the patient's motor and sensory functioning at the time of the examination. But often a change in emotional status is associated with temporary or lasting changes of function under circumstances which make it unlikely that the lesion has changed in equivalent manner. Reasonably, changes in the status of the lesion can only be inferred from changes in the function in a standard state, preferably maximum functional capacity. It therefore becomes desirable to have some way of separating that part of the patient's disability which is necessarily determined by the organic lesion of the central nervous system, from that part which is due to the patient's reaction to his total life situation, including the organic lesion and the attitude of other people to him and to his disability.

Many observers have been so impressed with the correlation between emotional status and performance in patients with multiple sclerosis, that for a while some workers seriously considered the possibility that psychogenic disturbances might be a primary cause of the lesions of this disease. While further observation has discouraged this point of view, many workers still feel convinced that psychological disturbances play an important part in determining the degree of functional impairment produced by a particular lesion (2, 4,).

It was in the course of a study designed to evaluate the effectiveness of a particular form of biochemical therapy in patients with multiple sclerosis that the possibility of using hypnosis to obtain a standard state for evaluation was suggested. This led to a further investigation of some of the ways in which the psychological status of the multiple sclerosis patient modified his neurological performance.

*Hypnosis in evaluating physiological and psychological components in functional impairment of patient with multiple sclerosis*

X.Y., a 33 year old man was referred by his family physician for a trial on muscle adenylic acid therapy (S). His first symptoms had appeared a little more than three years earlier, and his course had been characterized by a series of exacerbations and remissions involving cranial nerves, and both motor and sensory tracts. Residual impairment was a little more severe upon recovery from each relapse, but he was in relative remission at the time of his first visit. After careful history and examination he was started on biochemical therapy. When re-examined four weeks later he was *subjectively* better, but only minor differences could be found on physical examination. On subsequent visits minor differences were noted both in subjective evaluation and on physical examination until about six months after his first visit when he suffered a marked relapse with weakness and incoordination of the lower extremities and weakness and paresthesias of the hands. There was gradual improvement over a period of about one month at which time he had returned almost to the status before the relapse.

In the next four months very little definite change took place, but the patient commented that he thought his performance (walking, etc.) was better at times when he was relaxed and at ease, and worse when he was tense, apprehensive, or tired. He was resistent to the idea that psychotherapy might help him to maintain a better emotional state more of the time, but mentioned that he had been an excellent subject for stage hypnosis prior to the onset of his illness. He was willing to cooperate in the use of hypnosis to improve his function only if it was agreed that no personal questions would be asked while he was in a hypnotic trance.

All hypnotic inductions and psychological evaluations were done by one of us (M.V.K.) while medical management and neurological evaluation was done by the other (A.S.).

The patient understood that hypnosis was going to be employed for the purpose of improving his muscular coordination and his control over body movements. He was initially skeptical but cooperative. There was no attempt to deal with the patient's feelings or attitudes towards his illness, nor to approach him in any formal type of psychotherapy. The use which he made of the hypnotic treatment relationship was apparently similar to that which he had made

of previous medical treatment relationships.

Induction was accomplished by an eye fixation technique with the patient sitting in a chair. A medium trance state was obtained rather readily. During ten subsequent inductions he never went much deeper into hypnosis, but always appeared to maintain a consistent medium trance state. In hypnosis the patient was directed to relax and feel at ease, physically and emotionally. Relaxation was usually characterized by the appearance of a general reduction in body tension, a dropping of the head to the chest, and the general characteristics of a sleep-like state. The patient would talk easily while in hypnosis and was able to maintain a trance state with his eyes open.

In the hypnotic state with his eyes open the patient was encouraged to walk around the room, first with no suggestions beyond the hypnotic state per se, and then with suggestions for increased control over his entire body and specifically over his leg movements and his feelings of being stable and secure. Additional hypnotic technique involved the use of visual imagery with the eyes open in which the patient visualized himself walking easily as he used to walk before his illness. In addition the patient was trained to induce self-hypnosis for the production of relaxation and the reduction of fatigue.

Psychologically, the principle change in the patient after the initiation of hypnosis was an increase in self-confidence about the use of his legs and an associated general decrease in emotional tension. Physically there was decreased spasticity and an improvement in walking. While the most marked improvement was noted during the hypnotic trance, post-hypnotic suggestions that the improvement would continue after the trance were fairly successful. On one occasion the patient, who ordinarily could walk only a few steps without his cane, came out of his hypnotic trance, rose from his chair, and had walked easily to the door about 20 feet away when he suddenly remembered that he had forgotten his cane.

After the fourth session in hypnosis the patient mentioned that he was constantly afraid of losing his balance and falling. This fear he said, was decreased since the start of therapy, and he was able to reduce it at will by brief periods of self-hypnosis. He felt

that walking and other bodily movements were improved by the process. He said that he also found self-hypnosis useful in reducing fatigue and spasticity.

In the interval between therapeutic sessions there was a tendency for the patient's performance to deteriorate to the pre-hypnotic level, but self-hypnosis restored part of the improvement. Both the patient and his wife considered that his capacity to carry out his daily tasks without fatigue were improved.

Nevertheless, a neurological examination carried out in the waking state one week after his last previous hypnotherapy session revealed no improvement over the findings 4 months earlier. Although the patient thought that his performance was better, objectively he was, if anything, a little worse. After a brief discussion of his ability to use self-hypnosis he was told to "turn it on", and was left sitting in his chair for 5 minutes. He was then found slumped forward with his eyes closed, his chin on his chest, and his arms on the arms of the chair.

Although he had previously stated that he could not maintain self-hypnosis with his eyes open, he was asked to open his eyes but to try not to "come out of it any more than necessary". He opened his eyes, blinked, shook his head, and said, "I think I am out of it". He said he felt "relaxed". Neurological examination was then repeated with no further comment.

It was found that whereas before self-hypnosis he had had great difficulty standing with his eyes closed and feet together, he was now able to do it effortlessly. A slight intention tremor previously noted in the left finger-to-nose test had completely disappeared, as had a slight but definite nystagmus on gazing to the left. The most marked alteration was found in the patient's ability to move his right heel along his left shin. Prior to self-hypnosis this was accomplished inaccurately and with great difficulty because of a knee clonus, but after self-hypnosis it was performed repeatedly accurately and apparently effortlessly. No knee clonus developed. Except for slight improvement in gait no other differences were noted in the post self-hypnosis neurological examination.

Since it had been agreed at the outset that no personal interviews or psychotherapy would be carried out while the patient was

in hypnosis, other than direct suggestions about improvement in performance, psychological testing was used in an effort to evaluate the effect of hypnosis on this patient and on his neurological performance. For this purpose the Wechsler Bellvue Scale; The House, Tree, Person Test; the Rorschach Test; and the Bender Gestalt Test were administered, first in the waking state and then under hypnosis. The differences noted between the test protocols in the waking and hypnotic states are summarized below:

1) - While the general over-all pattern of intellectual functioning was essentially unchanged, there was some indication that memory and concentration were not as effective in the hypnotic state as in the waking state.
2) - Anxiety levels in hypnosis appeared to be considerable reduced.
3) - Sensory-motor coordination, spatial perception and general handling of small muscle activity were distinctly improved.
4) - The hypnotic Rorschach was much more expansive than the waking test protocol. There appeared to be much less constriction and general inhibition of affect. Response to color was noticeably increased and there was likewise an increase in movement response. In general the Rorschach differences suggest that the effect of hypnosis for this individual was to increase his emotional spontaneity, permitting the emergence of greater expression of aggressiveness and of some hostility. As this emotion was expressed, anxiety indicators appeared to decline significantly and to assume a less important role in the total Rorschach configuration.
5) - The Bender Gestalt and the House-Tree-Person Test revealed better control of hand movements in hypnosis. From a psychodynamic point of view there was a decidedly improved concept of the self. The drawings in hypnosis were better positioned, more stable and more adult in form. There was a freer expression of sexuality and less distortion of body imagery.

From the psychological test data alone, the impression was gained that the effect of hypnosis on the patient was to release a good deal of feeling and ideation that usually was held under much more strict and somewhat rigid control. With the release of this there seemed to be less fear of losing control of the self and a tend-

ency to project more stable feelings about the self. There was less morbidity than in the waking state and the very real projection of depression was almost completely obliterated. Thus it would seem that hypnosis itself had a significant effect upon the way in which this patient viewed himself and managed his feelings and attitudes. To a great extent the alterations reported here can best be described as ego alterations and were largely unconscious. In principle, they are similar to those previously observed in psychiatric patients. Apart from the improved level of sensori-motor functioning, the indicated trend toward alteration of ego-functioning factors in this patient would appear to be most outstanding. (Since this involves the element of body image which is so crucial to physical fitness in general, no attempt to evaluate the effacacy of hypnosis in this case of organic disease can overlook the psychodynamic elements brought out by the psychological tests.)

*Discussion:* Several questions arise:

1)- What, if any, effect did hypnosis have on the organic lesions of multiple sclerosis in this patient? The answer is fairly simple —- none.

What, if any, effect did hypnosis have on the attitude of this patient to his organic disability? Limited as we have been by this patient's unwillingness to permit any approach to psychodynamics by direct interview, the answer to this question is based solely on psychological test data and superficial observation. It seems however, that the hypnosis, suggestion, and self-hypnosis as well as perhaps the inter-personal relationships involved, brought about an alteration of the way in which the patient perceived his organic disability, and consequently in the way in which he dealt with it. It is our impression that the "body image" which the patient *per*ceived and *con*ceived after hypnosis was a more appropriate one for the actual status of his organic disabilities. It was probably for this reason that he was able to function better and to be more confident of his ability to function better. For the patient with multiple sclerosis, one of the most terrifying aspects of the organic neurolog-

ical lesion is his feeling that only by conscious concentration on the details of sensory and motor function can be maintain an acceptable level of performance. The transfer of this process from conscious awareness to unconscious semiautomaticity by the use of hypnosis seemed to relieve him of some of his anxiety about his own responsibility for his performance and also to decrease his depression about his limitations and guilt feelings. The feeling of self-confidence was particularly reenforced by his ability to induce at will a self-hypnotic trance which could be relied upon to be followed by a period of diminished spasticity without his having to consciously concentrate on the muscular processes.

3) - What use can be made of hypnosis in the management of patients with multiple sclerosis? Our findings in general are in accord with the now accepted point of view that in suitable subjects, hypnosis may be used as an adjunct to psychotherapy and social adjustment in helping these patients to make their condition more acceptable and their lives more meaningful. Improvement of this kind is valuable and is often associated with improved function. There are, however, patients who *will* not accept or *cannot* profit from dynamic psychotherapy, who may be helped by the techniques described in this report.

Another pressing problem is the search for drugs which will be of value in modifying the symptoms and course of the disease. This investigation is now complicated, among other things, by "spontaneous" fluctuations in performance which may often be psychogenically determined. Large numbers of patients must therefore be statistically compared in order to derive any valid information; and often the heterogeneity of the responses may cause the total rejection of a fairly useful drug or procedure which could be much more useful if suitably modified. A few experimental subjects with multiple sclerosis who are also good hypnotic subjects might provide a sufficiently constant control level so that drugs or procedures with slightly beneficial effects could easily be recognized, and developed or combined to provide an effective form of therapy for non-hypnotic subjects as well.

Further detailed comparison of the subjective and objective aspects of the behavior of the multiple sclerosis patient under hypnosis with various kinds of suggestion, with his performance in the post hypnotic and waking states, are urgently needed.

A successful multi-disciplinary approach to this problem may lead to an understanding of the details of interaction of psychological and physiological factors in the production of the disabilities of patients with organic disease.

*Summary:*

1) - The availability of a patient with multiple sclerosis who was known to be a good hypnotic subject provided an opportunity for the study of the effect of hypnosis on the manifestations of his desease.
2) - Because of the patient's unwillingness to accept psychodynamic psychotherapy or to allow personal interviewing under hypnosis, therapy was limited to the induction of hypnosis; suggestion of improved performance and the visualization of improved performance, and self-hypnosis.
3) - Certain subjective and objective improvements were noted.
4) - Psychological evaluation was limited to superficial observation and psychological testing in the waking state and under hypnosis.
5) - Psychological test data were used to formulate a mechanism whereby the patient's hypnotically altered perception and conception of his damaged body image served as a means of reducing his anxiety and depression and improving his performance.
6) - The value of hypnosis in the treatment of multiple sclerosis and in the separation of impairment due to the anatomical lesion from that due to the patient's reaction to the lesion has been suggested and discussed.
7) - Further investigations of this kind have been suggested.

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# THE APPLICATION OF HYPNOSIS IN ORGANIC DISEASES

(by B. Stokvis – Leyden) *

In many purely somatic, so-called "organic" diseases, the functional disturbance, which we call the symptom or the syndrome of the disease in question, exceeds the damage to the affected organ. Thus, it is often found that the functional disturbance in an organic affection lasts longer than the actual damage to the organ itself; not unfrequently, indeed, the disturbance takes an autosuggestive turn for the worse. Moreover, organic diseases are elaborated by neurotic patients in a manner differing from the reactions of the mentally healthy: the complaints of the former are often considerably stronger than those of the latter.

Hypnotic treatment, applied as a symptomatic treatment, is especially indicated in those cases of organic diseases in which the patient has neurotically elaborated his physical suffering. Such "neurotization" is often found in patients with chronic diseases (carcinoma, tuberculosis, heart diseases, skin diseases, neurological affections).

In cases presenting neither etiological nor secondary psychic factors, one may try to improve the patient's condition by hypnotherapy (e.g. for alleviating pain).

Thus, for instance, one may reduce the intensity of the symptoms in patients with tabes or syringomyelia. The same applies to the post-traumatic syndrome (e.g. symptoms following a cranial trauma, [R.W. Buckley (2)]. Both Brown (1) and Klumbie (3) pointed a few years ago to the significance of hypnotherapy; Mohr (5), at the second Psychotherapeutic Congress in Lindau (1951), stressed the euphorizing action of hypnosis on patients with chronic diseases. The application of psychotherapy in general, and of hypnosis in particular, should, however, take place with great caution in these purely somatogenic disturbances. Only in cases of quite doubtless indication should hypnosis be resorted to. This applies especially to chronic cases.

* From the Psychosomatic Center of the Leyden State-University

CASE NO. 1

Chronic disease. (carcinoma mammae).

Mrs. C (65), wife of a grammar-school rector, came for treatment in September. When visiting the R.M.O. on account of facial eczema, the physician quite accidentally discovered the patient's carcinoma mammae.

*Objective examination* showed: skin of left breast strongly wrinkled; palpation reveals a tumour the size of a small saucer, which cannot be moved to and fro either against the skin or against the substratum. Some glands can be felt in the left axilla. Right: Strong retraction of the nipple. The right axilla is free. The bilateral tumor is considered inoperable. Duratio vitae: three months. In order to mitigate the patient's suffering after irradiation, and give her fresh courage, hypnosis is resorted to, the purpose and value of the treatment being explained to her husband, so as to prevent any misunderstanding, In the beginning the patient comes (from another town) twice a week for treatment. Hypnotic suggestions are put to her in which the consequences of the irradiation are represented as being less disagreeable. These suggestions prove unsuccessful; evidently the toxic action of the tissue, destroyed by the rays, is too strong. On being consulted, the doctor administering irradiation declares that he regards it as a merely suggestive therapy *(ut aliquid fieri videatur),* and does not believe in its efficacy. He accordingly agrees to stop its administration, to the patient's considerable satisfaction. This results in a strengthening of the positive transference.

We now decided to formulate our suggestions differently, i.e. "The disease will now take a more favorable course, thanks to the harmonious effect of the changed treatment on the psycho-physical personality. You will begin to feel better and more cheerful, and face the future with more courage."

Against all expectation the patient, who had every confidence in the physician, improved markedly. As late as September of the following year she was still travelling once a week to the physician's consulting rooms, and was in good spirits. The cancerous tumor, as far as palpation could show, had remained stationery. Not

until February of the following year did death supervene.

It will be clear from the above case that the patient's mental disposition towards his illness can be a deciding factor in the curative process.

It is precisely those initially favourable results of the application of psychotherapy in cases of somatogenic illness, that have discredited the psychic therapy in the eyes of some physicians, because this initial improvement may mislead both the patient and the doctor. Especially the non-medical assistant may in the long run begin to regard the psychic method of treatment as a panacea.

I do not deny, of course, that in some cases of purely somatogenic illness, hypnosis may definitely yield good results. Thus, in cases of multiple sclerosis (4, 6), hypnosis can definitely cause *temporary* improvement; but . . . that applies to any and every remedy in this disease. I did see some favourable – if also merely temporary – results in a few sufferers from Parkinson's disease, paralysis agitans.

I cannot share at all the enthusiasm with which KOSTER for instance describes the use of hypnosis in sufferers from organic diseases. The present writer's evident lack of appreciation of hypnotherapy in organic diseases does not include the treatment of diseases which are definitely psychosomatically determined. In such cases hypnotherapy may be indicated either as a dis-covering (hypnocatharsis, hypnoanalysis), or as a covering therapy (increased repression of still active conflicts). Great stress must be laid on the significance of the action of hypnosis in vegatative disturbances in which there occurs a switch-over from the psychic plane to the autonomic nervous system, via the diencephalon, and in which the experience of the resultant improvement may have a liberating effect on the patient (7)?

## SUMMARY

Hypnotherapy, applied as a symptomatic treatment, is especially indicated in those cases of organic diseases in which the patient has neurotically elaborated his physical suffering. In cases presenting neither etiological nor secondary psychic factors one

may try to improve the patient's condition by hypnotic treatment. Description of a case (hypnotherapy in a woman with carcinoma mammae). The writer's lack of appreciation of hypnotherapy in organic diseases does not include the treatment of diseases which are definitely psychosomatically determined.

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# CONCERNING SOME POINTS ABOUT THE NATURE OF HYPNOSIS

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There appears to be a remarkable similarity between the techniques that are recommended for the induction of hypnosis and the procedure which is normally employed in the "psychological mothering" of an infant.

To appreciate the extent of this similarity, we performed the following experiment:

Having selected six normal children, 25 to 37 months old, we started by inquiring into all the details on how the mother usually lulled the child to sleep, and took the utmost care in following her technique as exactly as possible. After some unhurried preliminaries to gain the child's confidence, and to make him comfortable in a big armchair, we followed a procedure that as a rule consisted in leaning over the little one, dedicating all our attention to him, repeating the mother's own series of soothing diminutives in a softly-modulated voice, and stroking gently the child's hair, forehead, or arm. In four to thirty-five minutes, the children relaxed, stopped moving, let their eyelids droop, and showed a particularly placid facial expression. Their appearance was completely similar to that of a hypnotized person.

Although it is a well-known fact since Liebault's times, that children are easy to hypnotize, and in our personal experience, some of the most rapid hypnotic inductions for therapeutic purposes have taken place in children from three to five years of age, we still had to answer the question: could it be proved that the state we had obtained solely by repeating the mother's technique corresponded to what is usually understood to be hypnosis?

The usual clinical tests for hypnotism are based on the production of suggestion-effects (the so-called "hypnotic phenomena") that cannot be simulated voluntarily.

Following what already has been done by Erickson (3), we proceeded to seek catalepsy and to test the limitation of communication with the outside world alien to the hypnotic situation. The most typical cataleptic response was found in a 29-month-old boy, hyp-

notized holding a Teddy-bear, to whom we insisted that he should hug the bear more and more tightly and by no means let it fall. The arm around the bear became rigid and remained in the same position without tiring for quite a long time, and when we later told the child to *try* to put that toy gently on his knees, he could not do it in spite of evident efforts.

All the children centered their attention on us, and this concentration of attention was so strong in a 37-month-old girl, that she appeared not to notice the people that successively entered the room (including her own mother) and spoke to her, according to previously given instructions.

Two of the children passed into a deep, normal sleep, completely outside their daily routine.

There is no doubt that once the child has developed the understanding of the spoken word (semantic representations), the mother, or mother substitutes, can implant suggestions as easily as we did in our experiment. This is nothing new, since Wetterstand (11) already employed in 1897 the technique of getting relatives of his patients to implant suggestions to them during sleep (making them pass from sleep into a hypnotic state), and particularly good results have been obtained in this manner with children. It is an everyday observation that a mother can suggest analgesia to a child who has hurt himself.

What is more, the mother uses the same technique from the day the infant is born. She repeats the induction process several times a day, with the same voice, the same intonations, and more often than not, the same words. This creates in the child conditionings for the hypnotic response, or as Howarth (4) prefers to say, "neural representations... as previously conditioned within the brain of the subject from past experiences from semantic visual/auditory distal invariants."

Relatives, or other mother-substitutes, as well as the therapist or research worker in hypnosis, can penetrate into the already established system of conditioning if they take pains to adapt themselves to the individual situation. This is not too hard, since some elements in this conditioning-system are universal: attention, rhythm, monotony, etc. Instinct has taught them to all mothers.

We repeated our previous experiment with eight infants from 3 to

24 months old and "lulled" them into a state of quiet relaxation. The difficulty does not consist in producing this special state, but in demonstrating that it is really hypnosis. However, if we consider the identity of the means employed in bringing it about, and the similarity of the results to those occurring at a slightly later age, it would be unreasonable to think that there is a certain reaction up to a certain age and a fundamentally different one from that age on.

Naturally, we cannot apply hypnotic tests based on verbal suggestibility to very small babies, but there are also non-verbal suggestions which are transmitted by gestures, changes in voice, differences in movement, etc., and which appear to be recognized at an early age. It is currently observed that a nervous (emotionally unstable) child is the reflection of a nervous mother. A popular opinion held that the milk of a mother who has suffered an acute emotional disturbance is "poison" for the baby. Yet the same effects appear in bottle-fed children. There has been talk about a "telepathy" between mother and child, that is, an extrasensory communication, but this communication can well take place through the ordinary senses, since Charlotte Bühler's studies on the social response of the infant (2), have shown that the baby can recognize movements, gestures and facial expressions very much earlier than words. Mears (6) has stressed the enormous importance of non-verbal and extra-verbal suggestions in hypnotized people.

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The softly-spoken words, lullabies and caresses which form the basis of the "psychological mothering" that induces the peculiar state in the infant that we consider to be identical to the "hypnotic state", appear to be as necessary for the survival and normal development of the child, as vitamins, minerals, etc. are necessary for physical health. It has been recognized that the child has a "hunger" for soft, rhythmic stimuli, analogous to its hunger for food.

It is hard to imagine a child with an absolute lack of these hypnotic inductions. Even if the mother does not provide them, there are almost always people with an instinctive love for children who will substitute for her at least for some brief periods. However, pediatric textbooks relate a tragic experiment of King Frederick I of Prussia, who desiring hardy people, commanded that the infants in

a foundling ward should receive good food but no caresses, and all the infants died.

In recent years, there has also been a tendency toward a strict and "sterilized" care for infants in institutions, separating them from the mother and handling them only when the routine care required it, with no "unnecessary" fondling, and the results of this attitude have been most discouraging.

Spitz (8-9) has reported his studies on this subject in a series of important articles. Stressing the enormous significance of the early relationship of the child to the mother, he takes into consideration a number of psychogenic disorders in the infant and classifies them into two groups: the psychotoxic disorders due to an alteration in the quality of the relationship to the mother, and the emotional deficiency diseases, due to a quantitative insufficiency of the emotional mother-child relationship. The second group of cases constitutes the "anaclitic depression" or "hospitalism" which he has studied preferently.

Recently Spitz (10) has witnessed and filmed the death of 34 babies in a foundling home who had all their physical needs satisfied, not so the psychological ones. The vitality of the children was seen to decrease in a visible manner after three months from their separation from the parents. Twenty-seven infants died before reaching one year of age, seven in their second year. The twenty-one children who survived all had serious physical and mental deficiencies.

In a controlled observation on 200 infants who received insufficient "psychological mothering", the same author found marasmus and death in 37½%. Other cases had severe depression, cachexia and underdevelopment. Spitz concludes that emotional starvation is to be considered as dangerous as physical starvation, and offers the hypothesis that this is due to the relative lack of delimitation between the psychic and somatic systems in the small child.

Margarethe A. Ribble (7) has studied the reactions in young babies who have not been "mothered" and describes two types of responses which we have also been able to observe while working in the Pediatric Clinics in Uruguay. The first is a general negativism, with refusal to suck, loss of appetite, failure to assimilate food, hypertonus, periods of screaming, breath-holding spells, constipa-

tion. The second is the depressive type, with lethargy, weakening, loss of the sucking reflex, loss of muscular tone, irregularities in breathing, gastrointestinal disturbances, a state similar to that of shock.

Mahler (5) considers that the insufficient stimulation of the child by its mother plays an important role in the etiology of child psychoses and schizophrenia. Similarly Bellack (1) has recently hypothesized that the development of the sensory and motor apparatus needs a "polarization" toward external stimuli of a consistent nature from a "mother figure", and that the lack of this "polarization" causes a deficiency in the development of the ego and a predisposition to schizophrenia.

The need for rhythmical "hypnotizing" stimuli in the young is so general that it goes down the phylogenic scale, and it is easy to find examples of mammals of different species, rhythmically "caressing" their offspring.

A relative insufficiency of natural hypnotic inductions is infinitely more common.

Ribble (7) has found that the innate startle reflex to a "fear of falling" which disappears with normal development, persists abnormally if it is not overcome by gentle motion or rocking, and that babies who do not get this form of mothering tend to substitute it by themselves with head-rolling, body-rolling, or other hyperkinetic manifestations. In the same way a startle reflex to noise persists much longer than is normal when the mother does not make a practice of speaking softly or singing to the baby.

The focusing of the developing sensory functions on the mother appears to be a *"foundation for a good emotional relationship later on,"* and *according to data of the same author, it also has to do with the capacity for intellectual concentration in the older child.*

These last conclusions of Ribble, based on facts which have been repeatedly stressed by pediatricians, are particularly interesting to us, coinciding with our own interpretation as to *how* the maternal hypnotic inductions may exert their beneficial effect on the child.

We believe that the systematic inductions of the hypnotic state in the infant by its mother create in the child's organism certain conditions which are favorable for the acceptance of suggestions

(education), for the development of the child's emotional stability, for the growth of his capacity for mental concentration, and for the establishing of conditionings, associations and symbolizations to the hypnotic response, which will enable him to establish "hypnotic relationships" with other people.

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Thus if we obtained hypnotic states in an experimental setting by following the mother's natural procedure, it can be admitted that the same "psychological mothering", applied in the natural setting produces hypnotic states in the infant daily, from the moment of birth.

Our experiment can be very easily repeated by any operator.

We believe that this situation can constitute a foundation for a new understanding of hypnosis. From this viewpoint, it is desirable to revise the problems of: hypnotic depth, basic hypnotic phenomena, induction of the hypnotic state, hypnotherapy, etc., etc.

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# AN OPERATIONAL APPROACH TO HYPNOSIS

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In seeking ways to give subjects and patients a concrete goal for the "ordinary" somnambulistic trance, I have frequently been driven to say that the hypnotic state is similar to that in sleepwalking, dreams, amnesic alcoholic episodes, brown studies, and so on. From this, it is an easy step to suggest that most of us have experienced accidental but unnoticed hypnotic states in the course of ordinary living. Finally, I have often said that we have subconscious awareness of just what hypnosis really is.

Induction is then directed to letting the subject achieve this state, using his own inner responses as criteria. The agent must also be alert to capitalize, but the states so achieved seem comparable, and are not open to the claim that the agent has tailored them to his preconceptions. Within limits, chemical and physical inductions should be similar. This method is open to easy validation, and offers a basis for experiments which are capable of correlation with a beginning assurance of a "standard" state. Old experiments redone with fairly uniform basic states should yield far more than they have so far.

It is too often forgotten that induction of hypnosis is not the same as the hypnotic state, and that the trance as such is not the same as a trance being used or limited for specific purposes. Even a casual examination of theories about the nature of hypnosis will reveal that these distinctions are seldom, if ever, made. Role playing, suggestion, active and passive hypnosis, the role of transference and rapport, must all be reconsidered when the hypnotic state is considered in itself. The processes associated with induction and use of hypnosis still need to be analyzed, but it is more fruitful to consider them separately.

Unwitting hypnosis, the developing of trances by contagion, or in moments of extreme emotional stress, suggest that the achieving of hypnosis is actually a very simple and easy process. I believe that eventually all but a very small percentage of people can be easily and deeply hypnotized. It remains for some worker to develop the ingenuity, skill and insight to find a reliable approach to

the problem. So long as most workers in the field are content with superficial effects and accept hypnotic states without any effort to isolate as many as possible of the many variables involved, we cannot expect a simple and reliable approach. I am sure that the answer is very simple, and that it will seem quite obvious once it has been found. It may be that only the most skilled workers will be able to use such a method, but as more and more people become able somnambulists they should be able to develop the skills and perceptions required.

What is hypnosis? I have said elsewhere that it is a state of relaxed concentration, which when neglected becomes a condition of reverie. I have also suggested that it depends on the pre-existence of dissociation between conscious and subconscious processes. It is thus typically directed inward. This does not connote loss of consciousness, since the subject maintains a definite focus of awareness. Observation of excellent subjects has shown that they will develop brief trances on a spontaneous basis. In these, they appear to turn their thoughts inward to gain direct access to subconscious material, and then turn outward again to use the insights gained. Such transitory states when not perceived can distort data gained from "waking" experiments with good subjects. These states are not usually noted by the subjects themselves unless attention is called to them, as I can attest from personal experience.

At the present time, I feel that even relaxed concentration is a distortion of the pure state of hypnosis. However, save for theoretical purposes, or experimental study of its nature, the pure state is not necessary. Chemically pure water is useful to the chemist, but he does little with it alone. Given a baseline from which to depart, it becomes possible to set up criteria and operations for specific uses and purposes.

An important source of confusion in work with hypnosis is the variation in depth of hypnosis. The most careful investigators have coped with this problem by long and painstaking conditioning of their subjects to the specialized states and depths they required. This may take as long as several hours, which is almost prohibitive for most purposes. A convenient procedure which is usually adequate is to give the subject some motor task by which he will indicate the presence and degree of hypnotic effect at all times and

from moment to moment. Thus, he may be told that whenever he is in a deep trance one arm will be horizontal and will drop whenever the effect lessens. For still deeper effects the arm might rise higher, and for particular experimental sets the arm may be bent at right angles, to straighten if the set weakens.

These controls do not take account of contaminating factors introduced by the subject or agent, by reactions of the subject to experimental tasks or procedures, or of a patient to therapeutic probing. The processes stirred up by hypnosis are both very subtle and exceedingly extensive, so that only a synoptic awareness of relevant factors can be gained at any given time. One safeguard is to have a hypnotized somnambulistic subject as observer in all experiments, with both "waking" and hypnotized subjects. Still better, and almost indispensable for hypnotherapy, is for the agent himself to be a highly trained hypnotic subject, so that he will have ready access to the unverbalized or peripheral awarenesses that he will be able to gain.

Is all this an unnecessary and unduly exacting approach to the subject? I do not think so. No competent worker can doubt the subtlety of hypnotic processes. If he is to have even borderline success it is essential that he utilize the most sophisticated analyses possible and be able to sense as many of the manifold nuances as he can. Not to do so is to perpetuate the chaos which now exists in theory, experiment and clinical applications. Psychoanalysis afforded us the first breakthrough to understanding of psychodynamics. Hypnosis gives promise of affording us still clearer and more detailed understanding. Surely this is a goal that warrants our best efforts.

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## BOOK REVIEW

### A. Philip Magonet: HYPNOSIS IN ASTHMA,

### London: William Heinemann, 1955

Insofar as they relate to the topic under discussion, Dr. Magonet has prefaced his clinical data on asthma with an outline of anatomy, physiology, pathology, etiology, and therapy. The hypnotherapy sections deal with children and adults. There are eleven cases of children and twenty-six of adults included in this compact little book of less than one hundred pages. As a collection of clinical material concerned specifically with the treatment of patients suffering from asthma, this hypnosis monograph is probably unique. It is a fine addition to a hypnosis library and should be of interest to hypnotherapists and to physicians concerned with research in psychosomatic medicine.

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